U.S. Department of the Interior U.S. Geological Survey

METAL INDUSTRY INDICATORS

March 1997

Indicators of Domestic Primary Metals, Steel, Aluminum, and Copper Activity

Growth in U.S. Economy Boosts Metal Prices

A strong 7.3% increase in new orders for U.S. nonferrous metals helped push the leading index of metal prices higher in January, the latest month for which the index is available. The leading index grew 0.7% to 96.6 from a revised 95.9 in December, while its 6-month smoothed growth rate rose to 0.8%. The 6-month smoothed growth rate is a compound annual rate that measures near-term trend.

The leading index of metal prices signals major changes in price growth an average of 8 months in advance. It is constructed with the 6-month smoothed growth rates of four different economic activities that are sensitive to the business cycle and that are measures of demand for metals.

January's 6-month smoothed growth rate of 0.8% is the first positive rate for the leading index since last April. A growth rate below -1.0% usually means decreasing growth for metal prices in the near future, while a growth rate above +1.0% usually means faster growth. The leading index is currently signaling modest growth for most metal prices in the months ahead.

The $5.9 billion deflated value of orders for nonferrous metals in January is the second highest value since the monthly series began in 1958. Current U.S. demand for metals is helping bolster prices, as the U.S. economy continues to grow at a faster pace than the economies of Europe and the Pacific region, which are experiencing sluggish growth overall.

Recent government data from Germany and Japan, however, suggest that economic growth may be picking up in those countries. While this could boost demand for metals, the economies of other industrialized countries will have to grow faster as well, if metal prices are to increase for a prolonged period as they did, for example, in 1987 and 1994.

The chart on page 2 shows growth in new orders and our index of nonferrous metal prices. New orders tend to be volatile, and on average, their growth leads growth in the nonferrous price index by about 3 months. The latest upward trend in new orders also explains, in part, the decline in inventories for nonferrous metal products held in the United States.

It is important to recognize that the business cycle and inventories are only two factors in price determination. Other factors that affect prices include changes in metals production, speculation, strategic stockpiling, and production costs.

(continued on page 2)

Leading Indicators (6 months ago and latest month)		**Outlook**
Leading Index of Metal Prices		
July '96	96.5	The leading index is pointing to modest growth for most metal prices in the near future.
Jan '97	96.6	
Primary Metals Leading Index		
Aug '96	120.4	The leading index indicates modest growth in domestic primary metals activity in the short term.
Feb '97	123.6	
Steel Leading Index		
July '96	102.9	Flat growth is likely for the U.S. steel industry in the coming months.
Jan '97	103.7	
Aluminum Mill Products Leading Index		
July '96	139.1	The leading indexes suggest modest near-term growth in aluminum activity.
Jan '97	140.9	
Copper Leading Index		
July '96	118.0	The U.S. copper industry will probably see flat to slow growth in the coming months.
Jan '97	119.7	

NOTE: Historical data back to 1948 for 12 of the indexes in Metal Industry Indicators (MII) are now on the World Wide Web. The URL for the MII is: http://minerals.er.usgs.gov/minerals/pubs/mii/

Link To Special Chart

(continued from page 1)

The contribution in percentage points of each index component to the overall leading index percent change for January is as follows: total value of new orders for nonferrous metals, 0.7; index of permits for new housing, -0.1; and U.S. M2 money supply, 0.2. The fourth index component, total debt for U.S. nonfinancial industries, was not available for the January calculation. Component estimates reported in dollar values are adjusted for inflation.

Leading Indexes Signal More Growth for U.S. Metal Industries

Several of the leading indicators that make up the metal industry leading indexes have shown considerable *(continued on page 12)*

Table 1.
Leading Index of Metal Prices and Growth Rates of the Nonferrous Metals Price Index, Inventories of Nonferrous Metal Products, and Selected Metal Prices

		Six-Month Smoothed Growth Rates				
	Leading Index of Metal Prices (1967=100)	MII Nonferrous Metals Price Index	U.S. Nonferrous Metal Products Inventories (1982$)	Primary Aluminum	Primary Copper	Steel Scrap
1996						
January	96.5	-19.4	6.1	-22.8	-21.2	10.6
February	97.1r	-16.4	7.9	-17.5	-20.4	6.6
March	97.6	-11.4	5.6	-9.6	-18.8	-3.3
April	97.2r	-9.2	4.8	-12.5	-9.9	-4.8
May	96.0r	-12.8	3.8	-14.1	-16.6	1.1
June	96.1r	-29.3	6.1	-21.6	-45.4	-2.2
July	96.5r	-24.1	10.6	-16.6	-39.9	-7.6
August	96.3r	-20.9	10.7	-15.6	-33.3	-5.8
September	95.2	-26.9	10.1r	-23.5	-37.6	-1.3
October	94.9r	-21.1	7.8	-16.6	-31.7	-13.3
November	95.4r	2.2	6.1	-2.8	11.8	-26.3
December	95.9r	-6.9	3.0r	-2.0	-11.2	-21.8
1997						
January	96.6	6.5	-2.3	9.8	6.6	-6.6
February	NA	11.0	NA	12.7	10.5	3.7

r *- Revised*

Note: The components of the Leading Index of Metal Prices are the 6-month smoothed growth rates of the following: 1, the deflated value of new orders for nonferrous metals; 2, the deflated value of total debt of U.S. nonfinancial sectors; 3, the index of new private housing units authorized; and 4, the deflated value of U.S. M2 money supply. The Metal Industry Indicators (MII) Nonferrous Metals Price Index measures changes in end-of-the-month prices for primary aluminum, copper, lead, and zinc traded on the London Metal Exchange (LME). The steel scrap price used is the price of No. 1 heavy melting. Inventories consist of the deflated value of finished goods, work in progress, and raw materials for U.S.-produced nonferrous metals and nonferrous metal products. Six-month smoothed growth rates are based on the ratio of the current month's index or price to its average over the preceding 12 months, expressed at a compound annual rate.

Sources: U.S. Geological Survey (USGS); American Metal Market (AMM); the London Metal Exchange (LME); and the Bureau of the Census

Link To:

Chart 1.

Table 2.
The Primary Metals Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
March	119.9r	3.7	106.3r	1.5
April	120.1r	3.6r	106.7r	2.1
May	120.2	3.2r	107.0r	2.5
June	120.5r	3.1	107.2r	2.6r
July	119.7r	1.2	107.7r	3.2
August	120.4r	2.2r	108.5r	4.0
September	120.2	1.5r	108.5r	3.6
October	120.3r	1.5r	109.3r	4.4r
November	120.3	1.2r	108.6r	2.7r
December	121.8r	3.3r	109.2r	3.3r
1997				
January	121.8r	2.9r	109.2	2.9
February	123.6	4.9	NA	NA

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 3.
The Contribution of Each Primary Metals Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**January**	**February**
1. Average weekly hours, primary metals (SIC 33)	-0.2	0.6
2. S&P stock price index, machinery, diversified	0.0r	0.3
3. Ratio of price to unit labor cost (SIC 33)	0.0	NA
4. JOC metals price index growth rate	0.2r	0.2
5. New orders, primary metals, (SIC 33) 1982$	0.2	NA
6. Index of new private housing units authorized by permit	-0.1	NA
7. Growth rate of U.S. M2 money supply, 1992$	0.1	NA
8. Purchasing Managers' Index	-0.2r	0.2
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	0.0r	1.3

Coincident Index	**December**	**January**
1. Industrial production index, primary metals (SIC 33)	0.1r	-0.1
2. Total employee hours, primary metals (SIC 33)	0.4	-0.1
3. Value of shipments, primary metals, (SIC 33) 1982$	-0.1r	0.2
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.5r	0.1

Sources: Leading: 1, Bureau of Labor Statistics; 2, Standard & Poor's; 3, Center for International Business Cycle Research, Bureau of Labor Statistics, and Federal Reserve Board; 4, Journal of Commerce; 5, Bureau of the Census and U.S. Geological Survey; 6, Bureau of the Census and U.S. Geological Survey; 7, Federal Reserve Board, Conference Board, and U.S. Geological Survey; and 8, National Association of Purchasing Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey; 3, Bureau of the Census and U.S. Geological Survey. All series are seasonally adjusted, except 2, 3, and 4 of the leading index.

NA*: Not available* ***r*** *- Revised*

Note: A component's contribution, shown in Tables 3, 5, 7, and 9, measures its effect, in percentage points, on the percent change in the index. Each month, the sum of the contributions plus the trend adjustment equals (except for rounding differences) the index's percent change from the previous month.

Links To:

Chart 2.

Chart 3.

Table 4.
The Steel Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
February	103.5r	2.7	97.8	0.9
March	103.1r	1.7	97.5	0.4
April	103.6r	2.5r	98.0r	1.3r
May	103.7r	2.2r	98.3	1.9
June	103.9r	2.0	98.8	2.7
July	102.9r	-0.1r	99.0r	2.7
August	102.5r	-1.0r	98.6r	1.5
September	102.5r	-1.0r	98.6r	1.2
October	101.8r	-2.2r	99.2r	2.2r
November	102.6r	-0.7	98.6	0.8
December	103.3r	0.6r	98.9r	1.2r
1997				
January	103.7	1.2	99.3	1.8

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 5.
The Contribution of Each Steel Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**December**	**January**
1. Average weekly hours, blast furnaces and basic steel products (SIC 331)	-0.1r	0.1
2. New orders, steel works, blast furnaces, and rolling and finishing mills, 1982$, (SIC 331)	0.2	0.1
3. Shipments of household appliances, 1982$	0.1r	-0.2
4. S&P stock price index, steel companies	0.0	0.1
5. Industrial production index for automotive products	0.0	0.1
6. Growth rate of the price of steel scrap (#1 heavy melting, $/ton)	0.0	0.2
7. Index of new private housing units authorized by permit	0.0	-0.1
8. Growth rate of U.S. M2 money supply, 1992$	0.2r	0.1
9. Purchasing Managers' Index	0.2	-0.2
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	0.6r	0.2
Coincident Index		
1. Industrial production index, basic steel and mill products (SIC 331)	0.1r	0.0
2. Value of shipments, steel works, blast furnaces, and rolling and finishing mills (SIC 331), 1982$	0.3r	0.2
3. Total employee hours, blast furnaces and basic steel products (SIC 331)	-0.2	0.2
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.3r	0.5

Sources: Leading: 1, Bureau of Labor Statistics; 2, Bureau of the Census and U.S. Geological Survey; 3, Bureau of the Census and U.S. Geological Survey; 4, Standard & Poor's; 5, Federal Reserve Board; 6, Journal of Commerce and U.S. Geological Survey; 7, Bureau of the Census and U.S. Geological Survey; 8, Federal Reserve Board, Conference Board, and U.S. Geological Survey; and 9, National Association of Purchasing Management. Coincident: 1, Federal Reserve Board; 2, Bureau of the Census and U.S. Geological Survey; 3, Bureau of Labor Statistics and U.S. Geological Survey. All series are seasonally adjusted, except 4 and 6 of the leading index.

NA*: Not available* ***r*** *- Revised*

Links To:

Chart 4.

Chart 5.

Table 6.
The Aluminum Mill Products Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
February	136.8	2.2	122.0	-0.9r
March	137.1	2.4	123.5	1.6r
April	138.5r	3.8r	122.6	0.3r
May	139.3r	4.0r	123.6r	1.9r
June	139.6r	3.7	121.8r	-0.8
July	139.1r	2.4r	123.3r	1.7r
August	139.5r	2.3	124.3r	3.1r
September	141.0r	4.2r	125.4r	4.5
October	138.4r	0.2r	123.8	1.7r
November	140.0r	2.1	123.5r	1.1r
December	140.6r	2.9r	124.3r	2.2r
1997				
January	140.9	2.8	124.4	2.0

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 7.
The Contribution of Each Aluminum Mill Products Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**December**	**January**
1. Average weekly hours, aluminum sheet, plate, and foil (SIC 3353)	-0.4	0.5
2. Index of new private housing units authorized by permit	0.0	-0.1
3. Industrial production index for automotive products	0.1r	0.2
4. Construction contracts, commercial and industrial (mil. sq. ft.)	0.0	-0.3
5. Net new orders for aluminum mill products (mil. lbs.)	0.2r	-0.2
6. Growth rate of U.S. M2 money supply, 1992$	0.3r	0.1
7. Purchasing Managers' Index	0.2	-0.2
T rend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.5r	0.1
Coincident Index		
1. Industrial production index, aluminum sheet, plate, and foil (SIC 3353)	0.9r	-0.1
2. Total employee hours, aluminum sheet, plate, and foil (SIC 3353)	-0.4	0.4
3. Shipments of aluminum mill products (mil. lbs.)	0.1r	-0.3
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.7r	0.1

Sources: Leading: 1, Bureau of Labor Statistics; 2, Bureau of the Census and U.S. Geological Survey; 3, Federal Reserve Board; 4, F.W. Dodge, Division of McGraw-Hill Information Systems Company; 5, The Aluminum Association, Inc. and U.S. Geological Survey; 6, Federal Reserve Board, Conference Board, and U.S. Geological Survey; 7, National Association of Purchasing Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey; 3, Bureau of the Census and U.S. Geological Survey. All series are seasonally adjusted.

NA: Not Available *r - Revised*

Links To:

Chart 6.

Chart 7.

Table 8.
The Copper Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
February	117.7	2.1	112.2r	0.7r
March	118.5	3.0	111.9	0.1r
April	119.3	4.0	112.6	1.2
May	119.2	3.2	112.6r	1.0r
June	118.1	1.0	112.6r	0.9r
July	118.0	0.6	113.0	1.5r
August	117.9	0.3	112.3	0.0
September	118.0	0.4r	114.0r	2.8r
October	118.4	0.9	115.2	4.4
November	120.4	3.7	113.1	0.5
December	119.8r	2.3r	113.8r	1.6r
1997				
January	119.7	2.1	113.0	0.1

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 9.
The Contribution of Each Copper Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**December**	**January**
1. Average weekly overtime hours, rolling, drawing, and extruding of copper (SIC 3351)	0.3	-0.4
2. New orders, nonferrous and other primary metals, 1982$	0.1r	0.4
3. MII stock price index, copper companies	-0.1	0.1
4. Ratio of shipments to inventories, electronic and other electrical equipment (SIC 36)	-0.2r	-0.4
5. Growth rate of the LME spot price of primary copper	-0.5	0.4
6. Index of new private housing units authorized by permit	0.0	-0.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	-0.4r	0.0
Coincident Index		
1. Industrial production index, primary smelting and refining of copper (SIC 3331)	0.1	-0.2
2. Total employee hours, rolling, drawing, and extruding of copper (SIC 3351)	0.3r	-0.7
3. Copper refiners' shipments (short tons)	0.1r	0.2
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.6r	-0.6

Sources: Leading: 1, Bureau of Labor Statistics; 2, Bureau of the Census and U.S. Geological Survey; 3, U.S. Geological Survey; 4, Bureau of the Census and U.S. Geological Survey; 5, London Metal Exchange and U.S. Geological Survey; 6, Bureau of the Census and U.S. Geological Survey. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics; 3, American Bureau of Metal Statistics, Inc. and U.S. Geological Survey. All series are seasonally adjusted, except 3 and 5 of the leading index.

NA*: Not available* ***r*** *- Revised*

Links To:

Chart 8.

Chart 9.

(continued from page 2) strength in recent months. New orders for primary metals are at the highest level since 1981 and metal prices have increased since the beginning of the year. Stock price indexes for the nonferrous metal industries, a measure of investor confidence, have moved higher with the rest of the U.S. equities market. And weekly hours worked by production workers remain high. All these indicators imply increased metals activity in the months ahead.

There is, however, not much room for more growth. Federal Reserve Board figures show that the primary metals industry is now operating at 91.2% of capacity, 11.2% higher than the capacity utilization rate for all durable goods manufacturing. Moreover, the nonferrous metal industries continue to operate at 95.0% of capacity. While the leading indexes are signaling more growth for the metal industries, actual growth will be low in the near term because of capacity constraints.

The primary metals leading index, which is the only metal industry leading index available for February, moved up 1.5% to 123.6 from a revised 121.8 in January. Four of the index's eight components were available, with the average workweek in primary metals establishments contributing almost half the increase in the leading index. The 6-month smoothed growth rate of the primary metals leading index, which has averaged 2.8% since October, points to modest growth in domestic primary metals activity in the near future.

In January, the steel leading index increased 0.4% to 103.7 from a revised 103.3 in December. Six of the nine index components were higher in January, with the growth rate of the price of #1 heavy melting steel scrap making the largest positive contribution to the index. The January 6-month smoothed growth rate of 1.2% for the steel leading index is barely above +1.0%, the range that usually indicates an upward near-term trend. The growth rate therefore suggests flat growth for the U.S. steel industry in the coming months.

The aluminum mill products leading index of 140.9 in January was just 0.2% higher than the revised 140.6 in December. An increase of a full hour in the average workweek in aluminum sheet plate and foil establishments made the largest contribution to the net increase in the index. Without the average workweek component, the aluminum mill products leading index would have fallen about 0.4%, primarily because of weakness in construction activity, the Purchasing Managers' Index, and new orders for aluminum mill products. The aluminum mill products leading index points to modest growth in that industry in the coming months.

The primary and secondary aluminum leading index surged 2.5% in January to 235.5 from a revised 229.7 in December. This was the largest 1-month percentage increase in this index in 4 years. Its 6-month smoothed growth rate moved up to 8.1%. Five of the six components of the primary and secondary aluminum leading index registered strong gains in January, with the average workweek, the ratio of shipments to inventories for motor vehicles, and new orders for nonferrous metals having the largest increases. Although the primary and secondary aluminum leading index is signaling increased demand for primary aluminum, some of that demand will likely be satisfied by imports. Consequently, the domestic primary and secondary aluminum industry may see only modest growth in the near term. (Tables and charts for the primary and secondary aluminum indexes are in a separate file.)

The copper leading index was little changed in January, slipping to 119.7 from a revised 119.8 in December. Increases in new orders, the price of copper, and stock prices were offset by declines in the ratio of shipments to inventories for electronic and electrical equipment, overtime hours, and building permits for new housing. The recent growth rates of the copper leading index and high capacity utilization rates suggest that the U.S. copper industry will see, at most, modest growth in the coming months.

The leading index for primary metals signals major changes in industry activity an average of 9 months in advance. The average leads for the steel and copper leading indexes are 8 and 7 months, respectively. Both the primary and secondary aluminum and aluminum mill products leading indexes signal changes in aluminum activity an average of 6 months in advance.

The next Metal Industry Indicators summary is scheduled for release on MINES FaxBack at 10:00 a.m. EDT, Friday, April 18. Access MINES FaxBack from a touch-tone telephone attached to a fax machine by dialing 703-648-4999.

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